



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/GB87/00450 <b>(22) International Filing Date:</b> 26 June 1987 (26.06.87) <b>(31) Priority Application Numbers:</b> 8615830 8616306 <b>(32) Priority Dates:</b> 27 June 1986 (27.06.86) 3 July 1986 (03.07.86) <b>(33) Priority Country:</b> GB <b>(71)(72) Applicants and Inventors:</b> STAPLEY, Arthur, John [GB/GB]; CHAPMAN, David, James [GB/GB]; 2-6 Fashoda Road, Bromley, Kent BR2 9RF (GB). <b>(74) Agent:</b> ORCHARD, Oliver, John; John Orchard & Co., Staple Inn Buildings North, High Holborn, London WC1V 7PZ (GB).		<b>(81) Designated States:</b> AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), NO, SE (European patent), US.  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> MIRRORS  <b>(57) Abstract</b> <p>An arrangement for clearing rain or spray from a vehicle's driving mirror includes the provision of one or more jets of air directed across the face of the mirror.</p> <div data-bbox="971 1136 1284 1871" data-label="Image"> </div>		

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MIRRORS

This invention relates to mirrors, and particularly to arrangements for mirrors on vehicles. Mirrors on vehicles tend to become obscured by rain and spray and the present invention provides means for making less likely the obscuring of mirrors on vehicles by rain or spray from passing vehicles.

In an embodiment of the invention to be described air is blown from holes at the outer edge of the mirror across the face of the mirror.

Embodiments of the invention will now be described by way of example, with reference to the accompanying drawings in which:-

Fig. 1 shows, in elevation, a mirror with an air blast tube fitted at one side,

Fig. 2 is a schematic drawing illustrating the operation of an arrangement similar to that shown in Fig 1 from a switch in the driver's cab,

Fig. 3 is a diagrammatic perspective view of a mirror with an air blast jet extending from a block on the mirror and

Fig. 4, is a diagrammatic perspective view of a mirror with a bendable air blast tube.

Referring to Fig 1, there is shown an air blast tube 1 arranged along one side of a mirror 2. The tube 1, which incorporates a number of holes 7, is attached to the mirror 2 in such a way that air, which is applied under pressure to the tube 1, is emitted via the holes 7 over a sufficient area of

the face of the mirror 2 that droplets of rain or spray, that would otherwise obscure the mirror, are discouraged from forming on the face of the mirror and the mirror is maintained reasonably clear for viewing.

5           The mirror 2 is held in a frame in a well known manner and supported on a fixing bracket 5. Within the bracket 5, there is a tube or pipe 6 which passes behind the mirror 2 and is coupled to the tube 1, as indicated by the dotted lines, in order to convey air under pressure to the  
10   tube 1.

Referring to Fig. 2, there is shown a mirror 2 attached to the cab 11 of a vehicle by a bracket 5 and having an air blast tube 1 arranged along one of its sides and an air supply tube 6, indicated by a dotted line, passing from  
15   the tube 1 within the mirror support bar or bracket 5 to a valve 12 controlled by a solenoid 3. The valve 12 controls the supply of air from a reservoir of air under pressure, (not shown) which is available on the vehicle, via a supply line 8. The solenoid 3 is operated via an electrical supply  
20   line 10 by a switch 4 in the driver's cab 11.

In operation, a vehicle driver closes the switch 4 in his cab and operates the solenoid 3 to open the valve 12, thereby causing air under pressure from the reservoir to be supplied via line 8 to the valve 12 and thence  
25   via the air supply tube 6 to the air blast tube 1, from which it issues through the holes 7 to sweep across the face of the mirror 2 in a continuous blast. In this way, any droplets of rain or spray, which might otherwise obscure the drivers

view through the mirror, are discouraged from forming and a clearer view is obtained through the mirror.

Referring to Fig. 3, there is shown a mirror 2 having a housing 13 which is mounted on a support bar or bracket 5 by means of an arm 15. An air supply tube 6 in the  
5 bracket 5 extends through arm 15 into block 16 mounted at the top of the housing 13. A jet nozzle 17 extends from the block and directs air, which has been brought to the block 16 by the tube 6, over the face of the mirror 2 in order to  
10 enable a clearer view through the mirror to be obtained. The jet nozzle 17 may be shaped to provide an appropriate coverage of the mirror 2, for example it may be fan-shaped. The jet nozzle 17 may be adjusted to direct the air to a particular location on the mirror, either by moving or  
15 bending the nozzle, so that the blast of air is caused to spread out over the face of the mirror 2, as required. There may be more than one block 16 arranged on any of the sides of the housing 13, as required, and the blocks 16 may form an integral part of the mirror housing 13.

20 Referring to Fig. 4, there is shown a modification incorporating an extension tube 18 of the air supply tube 6, the extension 18 being fixed to the housing 13 behind the mirror 2 and being bent over the top of the housing 13, so that it directs a blast of air to the mirror 2 at an angle  
25 such that the air is caused to spread out over the mirror 2, as required, to keep the mirror 2 clear. The position and angle of the tube 18 may easily be adjusted.

It will be understood that although the invention has

been described, by way of example, with reference to particular embodiments, variations and modifications may be made within the scope of the invention. For example, the holes 7 shown in the tube 1 may be incorporated in the inner rim of the housing 13, the rim being sealed to the mirror 2, and the air supply tube 6 may terminate within and be sealed to the housing 13 behind the mirror, means being provided to enable air from the tube 6 to pass around the edges of the mirror 2 and be emitted through the holes 7 in the inner rim of the housing 13 so that it is forced over the face of the mirror 2, as described above in order to clear the mirror 2. Alternatively, the air blast tube 1 may extend around more than one side of the mirror 2.

It will also be appreciated that, particularly in the case of the embodiments described with reference to Figs. 3 and 4, the block 16 and nozzle 17, the air supply tube 6 and the extension tube 18 may be attachments to an existing mirror. The tubes 6 and 18 may be run along the outside of the mirror support arm or fixing bracket 5 and the housing 13 and be attached thereto by clips 19, indicated in Fig. 2.

It will also be understood that, although an electrically operated valve has been described for controlling the flow of pressurised air, it would be possible to use a manually operated valve.

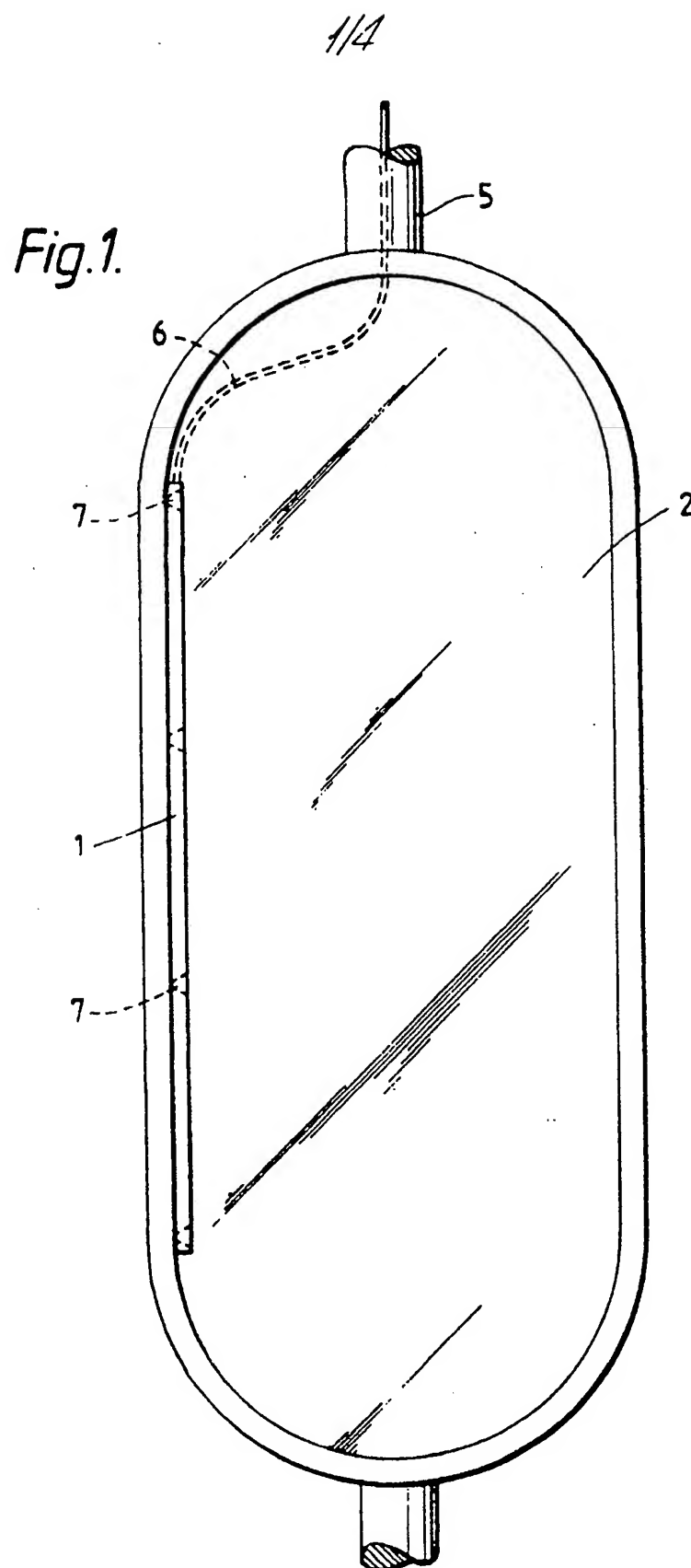
It will also be understood that the air blast tube 1 may form an integral part of the mirror housing 13 and may be arranged in other positions, for example around the complete periphery of the mirror so that the holes 7 enable

air to be blown from all directions across the face of the mirror.

CLAIMS

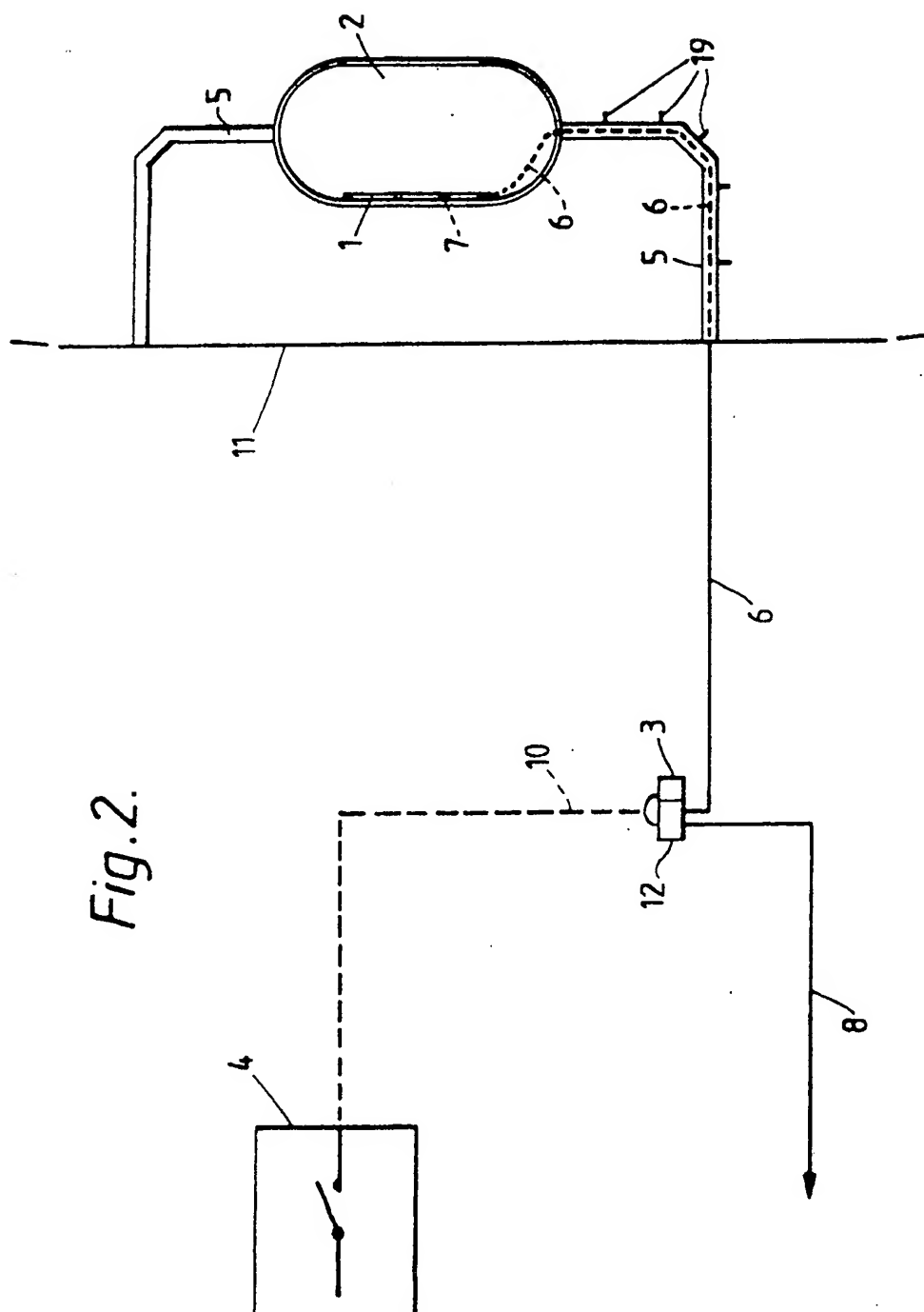
1. An arrangement for a vehicle mirror including means for coupling supply of air to the mirror and means for directing air across the surface of the mirror.
2. An arrangement as claimed in claim 1 including a  
5 valve arranged to control the supply of air to the mirror.
3. An arrangement as claimed in claim 2 including an electrically operated valve arranged in the air coupling means.
4. An arrangement as claimed in any one of the  
10 preceeding claims including a tube arranged along the edge of the mirror, the tube being connected to the means for coupling the supply of air, and holes being arranged along the length of the tube for directing air across the surface of the mirror.
- 15 5. An arrangement as claimed in any one of claims 1 to 3 including a tube or nozzle connected to the means for coupling the supply of air and arranged to direct a jet of air from an edge of the mirror on to the face of the mirror.
6. An arrangement as claimed in any one of the claims  
20 1 to 3 having a housing for the mirror, an inner rim of the housing adjacent to the surface of the mirror having holes therein arranged to direct air supplied to the housing across the face of the mirror.
7. An arrangement as claimed in claim 4 wherein the  
25 tube is arranged around the periphery of the mirror.





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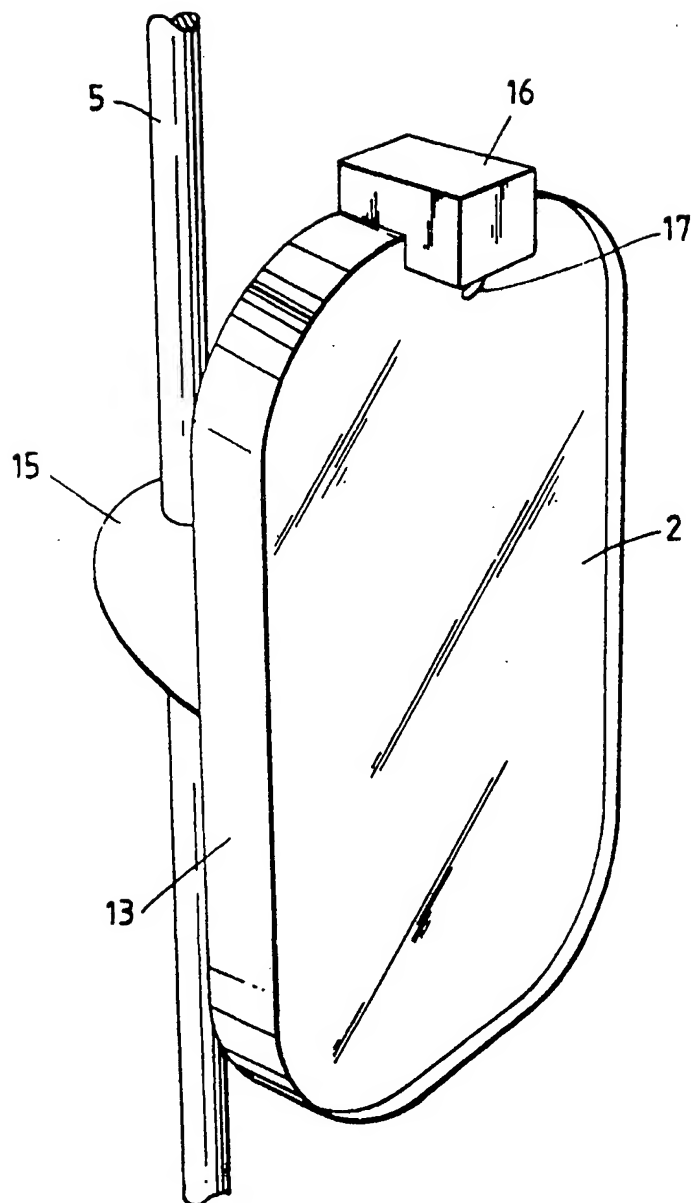
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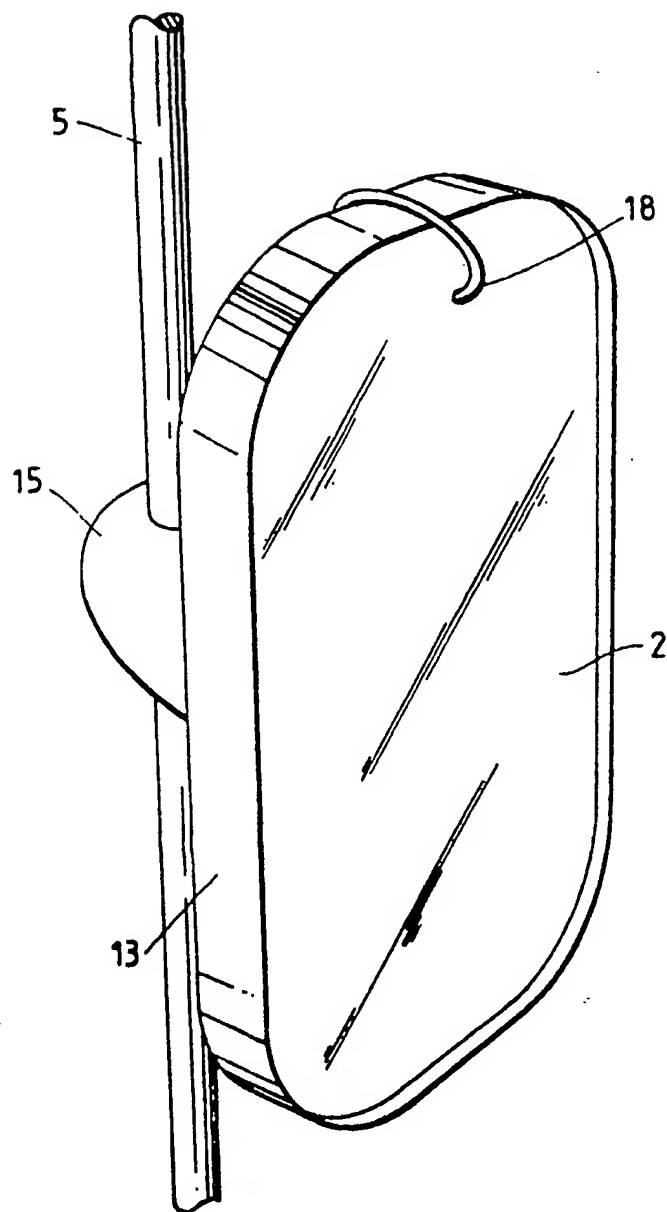
Fig. 3.



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Fig. 4.



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# INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 87/00450

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC <sup>4</sup> :        B 60 R 1/06		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
IPC <sup>4</sup>	B 60 R	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>9</sup></b>		
Category <sup>6</sup>	Citation of Document, <sup>11</sup> with Indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	DE, A, 2411547 (DAIMLER BENZ AG) 18 September 1975 see the entire document	1,2 5
A	--	
X	DE, A, 2152183 (RINGELING) 26 April 1973 see the entire document	1,2 4,5
A	--	
X	DE, A, 2321027 (HELFRICH) 14 November 1974 see page 4, lines 5-15; figure 2	1 4-7
A	-----	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents: <sup>10</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
5th August 1987		28 AUG 1987
International Searching Authority		Signature of Authorized Officer
EUROPEAN PATENT OFFICE		L. ROSSI

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/GB 87/00450 (SA 17711)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 12/08/87

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A- 2411547	18/09/75	None	
DE-A- 2152183	26/04/73	None	
DE-A- 2321027	14/11/74	None	

For more details about this annex :  
see Official Journal of the European Patent Office, No. 12/82